



Department of Energy

ROCKY FLATS FIELD OFFICE
10808 HIGHWAY 93, UNIT A
GOLDEN, COLORADO 80403-8200

000-DOE-03206

AUG 14 2000

Dear Stakeholder:

The meeting minutes from our July 13, 2000, Rocky Flats Cleanup Agreement (RFCA) Annual Review/Radionuclide Soil Action Level (RSAL) Public Meeting are enclosed. I appreciate the comments received from many of you during and after the meeting. The meeting minutes contain numerous issues, questions, and suggestions from members of the public. Some of these were responded to real time during the meeting, and the minutes reflect these responses. For other comments, we are still considering how best to respond to or incorporate these suggestions into our review process. For any questions or more information on this review, please feel free to call me at (303) 966-2282, Russell McCallister at (303) 966-9692 or Paul Hartmann at (303) 966-5379.

As discussed during the meeting, it is my intent that the RFCA review teams will provide periodic updates via e-mail to interested stakeholders regarding the review progress. The first update is enclosed with this information package. You are encouraged to contact the appropriate RFCA review team leader to become involved in the review or for questions or comments. Additionally, a second public meeting will be scheduled and announced once the RSAL review draft report is completed.

Thank you for your interest and participation in this important process.

Sincerely,

A handwritten signature in blue ink, which appears to read "Joseph A. Legare".

Joseph A. Legare
Assistant Manager
for Environment and Infrastructure

Enclosures

Radionuclide Soil Action Levels
Work Assignment Status Report
August 10, 2000

Action 1 Conduct a regulatory analysis

Regulatory Review

U.S. Environmental Protection Agency

EPA is conducting a review of radiation regulations to determine what regulation should be used as a basis for radiologic soil action levels (RSALs) at Rocky Flats. This is an important question since the draft EPA Radiation Sites Cleanup Rule, which was the basis of the current RSALs, is now defunct. The closest thing we have to a national cleanup rule for radioactively contaminated sites is the Nuclear Regulatory Commission (NRC) Decommissioning Rule which sets dose limits of 25/100 mRem/year (in contrast to the 15/85 mRem dose limits that were in the defunct EPA rule). The NRC rule is not directly applicable to Rocky Flats because NRC does not have regulatory authority over Department of Energy facilities. However, the argument could be made that because the rule is relevant to the cleanup of radiologically contaminated facilities, it may be appropriate as a basis for the Rocky Flats RSALs. In fact, the State Attorney General's Office has identified the NRC rule, now adopted as a State rule, as one that should be considered. As many in the Focus Group already know, EPA has been critical of the NRC Rule because it believes dose limits of 25/100 mRem/year are generally not protective of human health and the environment. EPA outlines its position in the following guidance documents:

"Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" August 22, 1997, OSWER Directive 9200.4-18

"Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals Under CERCLA," August 22, 1997, OSWER Directive 9200.4-23

Both of these documents are available on-line from:

<http://www.epa.gov/superfund/resources/radiation/radarars.htm>

Or contact Tim Rehder (303) 312-6293 or Karen Reed (303) 312-6019 for hard copies.

The General Accounting Office recently addressed the controversy between EPA and NRC in the document "Radiation Standards – Scientific Basis Inconclusive, and EPA and NRC Disagreement Continues," June 2000, GAO/RCED-00-152

Lawyers from the Site, EPA and the State Attorney General's Office will meet on August 15th to initiate discussion on this issue. Tim Rehder and/or Karen Reed will keep the Focus Group apprised on how this discussion is progressing.

Contact: Tim Rehder 303-312-6293, Rehder.Timothy@epa.gov

Or Karen Reed 303-312-6019, Reed.Karen@epa.gov

Department of Energy

DOE obtained and has reviewed the July 11, 2000 Memorandum from Dan Miller, CDPHE re: Radiation Control ARARs at Rocky Flats. We have also reviewed the new OSWER Directive (Attachment 1) on "Headquarters Consultation for Radioactively Contaminated Sites." Although it does not directly apply to us, it does state the EPA Headquarters is available to support federal facility sites.

Contact: Russell McCallister at 303-966-9692, russell.mccallister@rfets.gov

or Paul Hartmann at 303-966-5379, paul.hartmann@rfets.gov

Action 2 Model Evaluation

The first action we undertook was to develop several Site conceptual models (Attachment 2) to look at different exposure scenarios. We chose the land use assumptions from RFCA, but also chose a Wildlife Refuge Exposure scenario that is being used in the Comprehensive Risk Assessment. We will be developing an exposure scenario for a resident rancher in the future. The conceptual models were developed to help us define the Model Selection Criteria (Attachment 3), and should not be confused with the final end land use for the site.

Based on the selection criteria, we have currently obtained MEPAS, GENII 1.485 and GENII-S, and MMSOILS. We are also in the process of obtaining a beta version of the new probabilistic RESRAD. We have also obtained a Monte Carlo/Sensitivity program called SUM3 that can be used with both MEPAS and GENII.

After performing a quick review of the MMSOILS documentation, it was not developed for Radionuclide risk/dose assessments. It was developed to calculate risks for chemical constituents. We have decided to drop this code from consideration (this fact is also reflected from Section MMSOILS in the RAC Task 2 Report).

Currently we are reviewing each model and following the Model Selection Criteria to determine the most appropriate model(s) for further consideration.

We continue to look at the RAC RESAD model as time permits, but have still been unable to recreate the results found in the final report. Will continue to work through the difficulties, including requesting more clarification from RAC on the difficulties we are experiencing.

Contact: Russell McCallister at 303-966-9692, russell.mccallister@rfets.gov
or Paul Hartmann at 303-966-5379, paul.hartmann@rfets.gov

Action 3 Parameter Evaluation

Nothing to report.

Action 4 New Scientific Information

DOE has obtained and reviewed several EPA Office of Radiation and Indoor Air Fact Sheets:

“Documenting Ground-Water Modeling at Sites Contaminated with Radioactive Substances”

“Environmental Characteristics of EPA, NRC, and DOE Sites Contaminated with Radioactive Substances”

“Computer Models Used to Support Cleanup Decision Making at Hazardous and Radioactive Sites”

“Environmental Pathway Models-Ground-Water Modeling in Support of Remedial Decision making at Sites Contaminated with Radioactive Material”

We also have reviewed the Appendix C, “Technical Basis for Dose Modeling Evaluation” as part of the Standard Review Plan for the Review of Decommissioning Plans and Other Information Submitted to Support the Release of Nuclear Facilities” Which is part of the NRC Final Rule on “Radiological Criteria for License Termination”

Action 4 continued

In addition, The ASTM Risk-Based Corrective Action (RBCA) Fate and Transport Models: Compendium and Selection Guidance" document has been reviewed.

Finally, the GAO report to Pete Domenici, US Senate on Radiation Standards has been reviewed.

DOE has recently been in contact with Los Alamos Laboratory, Hanford and EPA Region X concerning any scientific information that might be available or forth coming on the recent wild fires that have occurred. Nothing has been received so far.

Information from the Site wind tunnel tests from the test burn should be available in the fall. Additional wind tunnel results from the lightning strike available winter.

Contact: Russell McCallister at 303-966-9692, russell.mccallister@rfets.gov
or Paul Hartmann at 303-966-5379, paul.hartmann@rfets.gov

Action 5 Cleanup Levels at Other Sites

A considerable amount of data from other radionuclide-contaminated sites has now been compiled and is being tabulated for comparison. These data are also being reviewed so that the context of the cleanup-related numbers can be understood and reported. State regulators and employees of federal agencies who oversee cleanup at other sites are contributing evaluations and will be reviewing the document for accuracy.

Contact Carl Spreng 303-692-3358, carl.spreng@state.co.us
or Steve Gunderson 303-692-3367, steve.gunderson@state.co.us



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 26 2000

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

OSWER No. 9200.1-33P

MEMORANDUM

SUBJECT: Headquarters Consultation for Radioactively Contaminated Sites

FROM: Timothy Fields, Jr. *Timothy Fields, Jr.*
Assistant Administrator

TO: Addressees

PURPOSE

The purpose of this memorandum is to request that EPA Regional Offices consult with Headquarters on Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) response decisions involving (1) onsite management (e.g., capping of material in place, building disposal cells) of radioactive materials, or (2) when there is a potential national precedent setting issue related to a radioactive substance, pollutant or contaminant. This consultation policy for CERCLA site decisions that are addressing radioactive constituents is applicable to Fund and potentially responsible party (PRP)-lead sites for which a CERCLA remedial or non-time-critical (NTC) removal action is planned. This consultation service is also available (although not included in this request by Headquarters) for decisionmakers at other Federal agency-lead and State-lead CERCLA radioactively contaminated sites, or radioactively contaminated sites where Resource Conservation and Recovery Act (RCRA) Corrective Action is being conducted.

BACKGROUND

EPA has instituted a number of management review procedures to ensure national remedy selection policies and procedures are being implemented in a reasonable and appropriately consistent manner at CERCLA sites. EPA issued a summary of the various consultation procedures currently in place in the "Consolidated Guide to Consultation Procedures for Superfund Response Decision" (OSWER 9200.1-18FS, May 1997). In addition, the current process for Headquarters review and consultation for CERCLA response decisions involves a review of proposed plans at Fund-lead and PRP-lead sites in accordance with the May 1996 OERR directive "Focus Areas for Headquarters OERR Support for Regional Decision

Making" (OSWER Directive 9200.1-17, May 22, 1996). These efforts are supplemented by various consultation requirements at the staff or management level and include: the National Remedy Review Board, removal program concurrences, lead sites workgroup and technical review workgroup review, and the Dioxin Review Workgroup. In addition, EPA has issued guidance that requests consultation for certain NTC removal actions; "Use of NTC Removal Authority in Superfund Response Actions" (February 14, 2000).

Previously at some CERCLA sites, the lack of a single comprehensive set of regulatory cleanup levels for radiation, together with the confusion as to the status of other Federal Agency regulations and guidance for establishing cleanup levels at CERCLA sites, has caused uncertainty as to the cleanup levels deemed protective under CERCLA. In response, EPA issued guidance entitled "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination" (OSWER No. 9200.4-18, August 22, 1997). This 1997 guidance provided clarification for establishing protective cleanup levels for radioactive contamination at CERCLA sites. The 1997 guidance reiterated that cleanups of radionuclides are governed by the risk range for all carcinogens established in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) when Applicable or Relevant and Appropriate Requirements (ARARs) are not available or are not sufficiently protective. Cleanup should generally achieve a cumulative risk within the 10^{-4} to 10^{-6} carcinogenic risk range based on the reasonable maximum exposure. The cleanup levels should consider exposures from all potential pathways, and through all relevant media (e.g., soil, ground water, surface water, sediment, air, structures, etc.). The 1997 guidance also provides a listing of radiation standards that are likely to be used as ARARs to establish cleanup levels or the conduct remedial action.

Since issuance of the 1997 guidance, EPA has provided additional guidance for addressing radioactively contaminated sites that is consistent with our guidance for addressing chemically contaminated sites, except to account for the technical difference between radionuclides and chemicals (e.g., health risks posed by radon and gamma radiation, significant additional costs for ensuring the long-term care and monitoring of onsite managed radioactively contaminated material). This effort is intended to facilitate compliance with the NCP at radioactively contaminated sites while incorporating the improvements to the Superfund program that have been implemented through Administrative reforms. We believe that these guidance documents provide a strong foundation for remedy selection at radioactively contaminated sites in a manner consistent with the NCP. Today's memorandum is the latest guidance in this effort. All guidance documents developed as part of this effort may be accessed on the Internet at <http://www.epa.gov/superfund/resources/radiation/index.htm>.

OBJECTIVE

Today's memorandum adds certain response actions for radioactively contaminated sites to the list of sites that we believe warrant consultation at the Headquarters level to better ensure appropriate national consistency. While we believe that the guidance documents issued to date, together with the NCP, provide a sufficient framework for appropriately consistent, reasonable

decision making under CERCLA, we believe that consultation on a subset of CERCLA sites addressing radioactive contaminants is warranted due to (1) the possibility of uncertainty over cleanup levels, (2) technical differences between radionuclides and chemicals, and (3) heightened stakeholder interest at many of these sites.

IMPLEMENTATION

Remedial and removal actions covered by consultation request

Consultation is requested at Fund-lead or PRP-lead CERCLA sites that involve onsite management (e.g., capping of material in place, building disposal cells) of radioactively contaminated material. It should be noted that although this consultation request applies specifically to onsite management of radioactively contaminated material, such response actions are generally not nationally precedent setting. Further, it is not the intent of this memo to discourage these types of response actions where appropriate. However, sites where these actions have been conducted have generally received much greater stakeholder interest, even in comparison with other radioactively contaminated sites. As a result, I am requesting this consultation to provide added sensitivity to stakeholder concerns at the national level.

This consultation request applies to both remedial and NTC removal actions. In addition to response decisions involving onsite management of radioactively contaminated material, Regions are also urged to consult with Headquarters when considering response actions that may constitute a national precedence for radiologically contaminated CERCLA sites.

Federal Facility, State Lead, and RCRA Corrective Action

This consultation service is also available for other Federal agency-lead and State-lead radioactively contaminated CERCLA sites, whether or not those sites are on the National Priorities List (NPL). In addition, because RCRA corrective actions are conducted in a manner consistent with CERCLA response actions¹, this consultation service is also available for those radioactively contaminated sites where RCRA corrective action is being conducted.

Consultation process

Consultations with Headquarters to meet this memo's request shall take place with OERR staff contact, Stuart Walker at (703) 603-8748, or if Stuart is unavailable, Robin M. Anderson at (703) 603-8747. Regions are asked to initiate consultation with Headquarters early in the

¹For further information regarding the consistency between CERCLA response actions and RCRA corrective actions, please see memorandum from Office of Enforcement and Compliance Assurance Assistant Administrator Steven A. Herman and Office of Solid Waste and Emergency Response Assistant Administrator Elliott P. Laws to the Regions entitled: "Coordination between RCRA Corrective Action and Closure and CERCLA Site Activities" (September 24, 1996).

process (e.g., prior to the proposed plan, Engineering Evaluation/Cost Analysis (EE/CA), or Explanation of Significant Differences (ESD)), such as when first considering onsite management of radioactively contaminated materials among the most favored response alternatives. Early consultation will allow the Regions to address questions or potential issues without adversely delaying the response action.

It is envisioned that most consultations will involve only one or two telephone discussions. Stuart and Robin will also coordinate their consultations with other Headquarters offices (e.g., the Federal Facilities Restoration and Reuse Office, the Office of Solid Waste, the Office of Site Remediation Enforcement, the Federal Facilities Enforcement Office, the Office of Radiation and Indoor Air, and the Office of General Counsel), when appropriate.

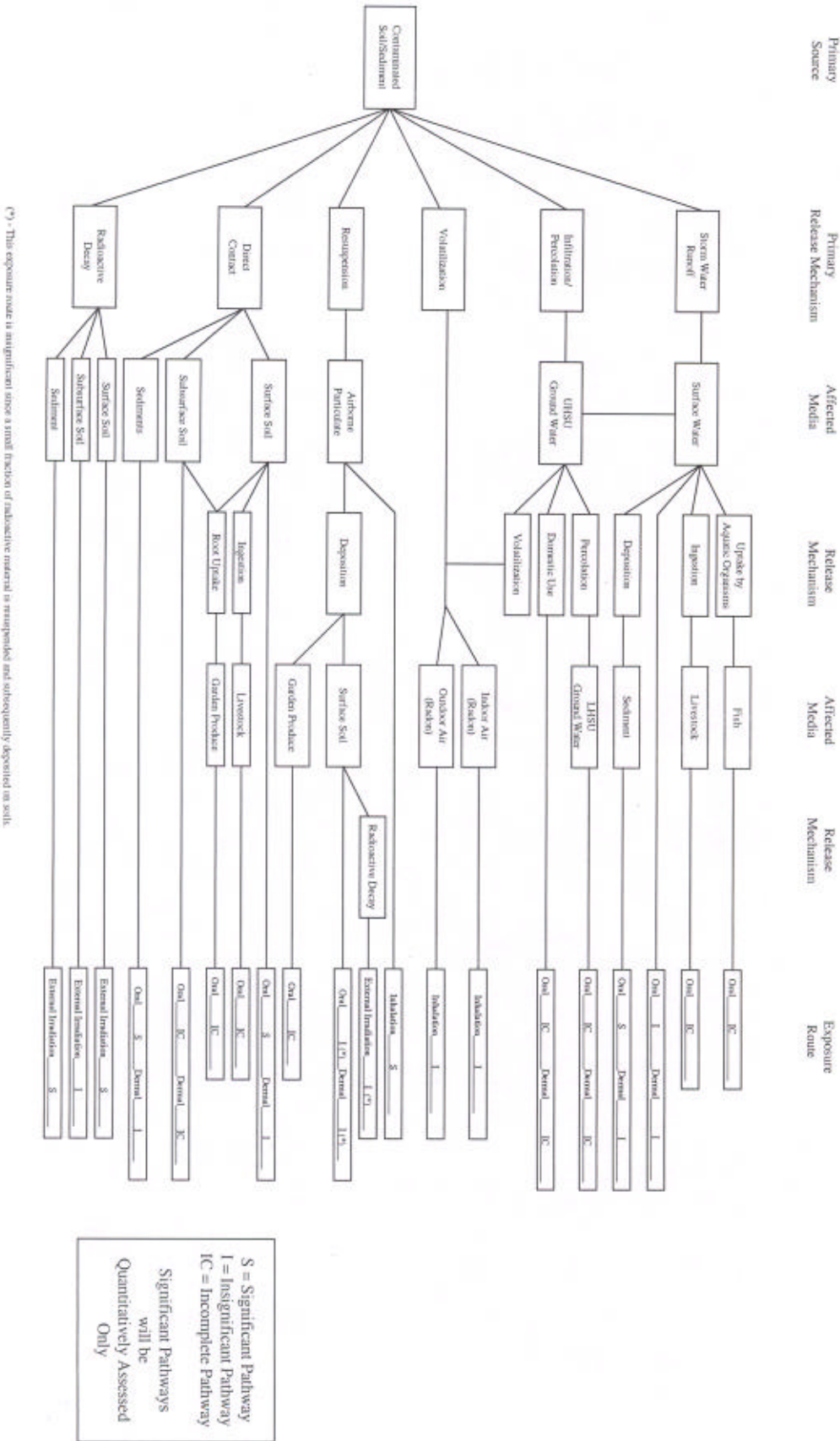
Addressees:

National Superfund Policy Managers, Regions 1-10
Superfund Branch Chiefs, Regions 1-10
Superfund Branch Chiefs, Office of Regional Counsel, Regions 1-10
Radiation Program Managers, Regions 1, 4, 5, 6, 7, 10
Radiation and Indoor Air Branch Chief, Region 2
Residential Domain Section Chief, Region 3
Radiation and Indoor Air Program Branch Chief, Region 8
Radiation and Indoor Office Director, Region 9
Federal Facilities Leadership Council
OERR Center Directors

cc:

Steve Page, ORIA
Jim Woolford, FFRRO
Elizabeth Cotsworth, OSW
Craig Hooks, FFEO
Barry Breen, OSRE
Joanna Gibson, HOSC/OERR

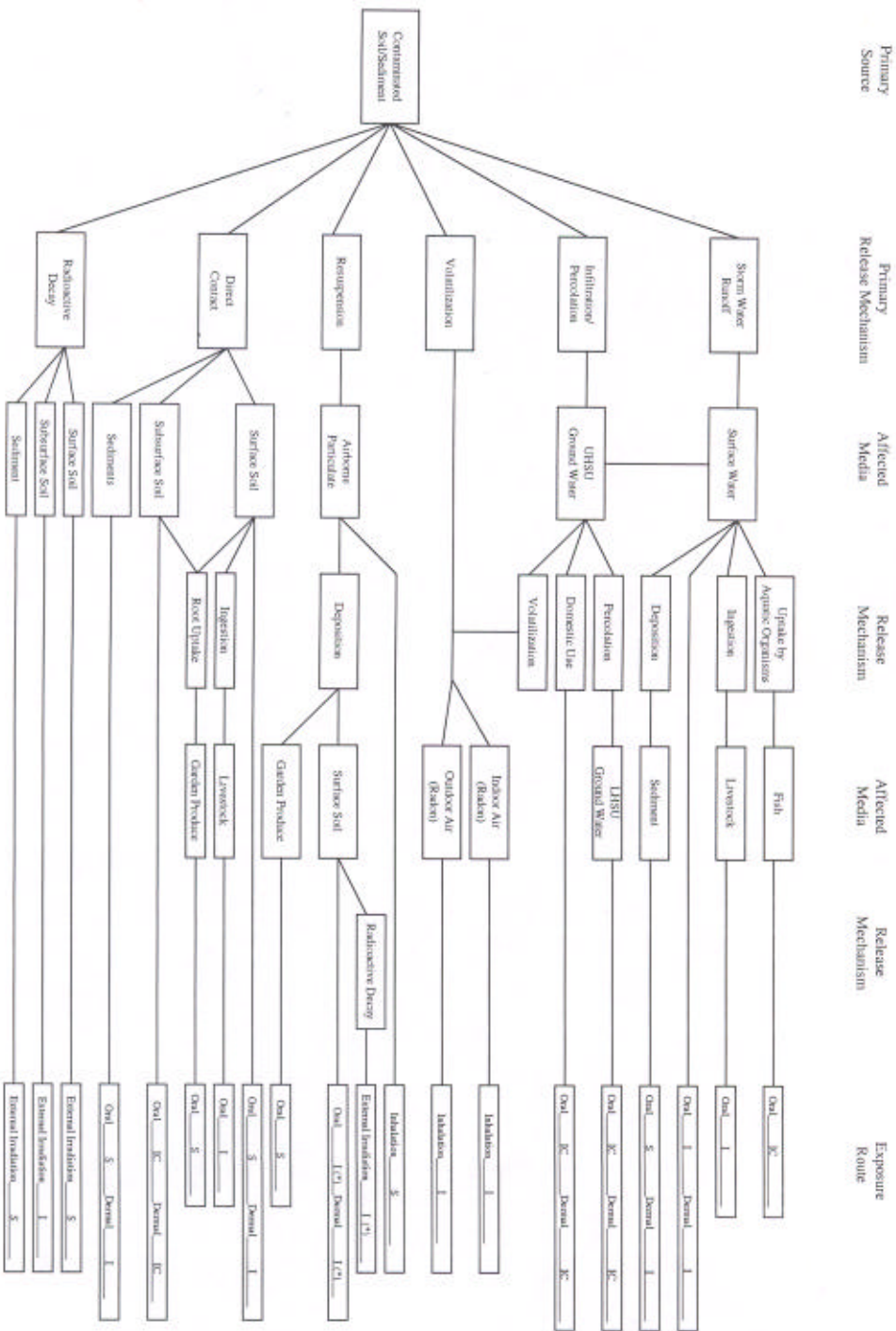
WILDLIFE REFUGE EXPOSURE SCENARIO



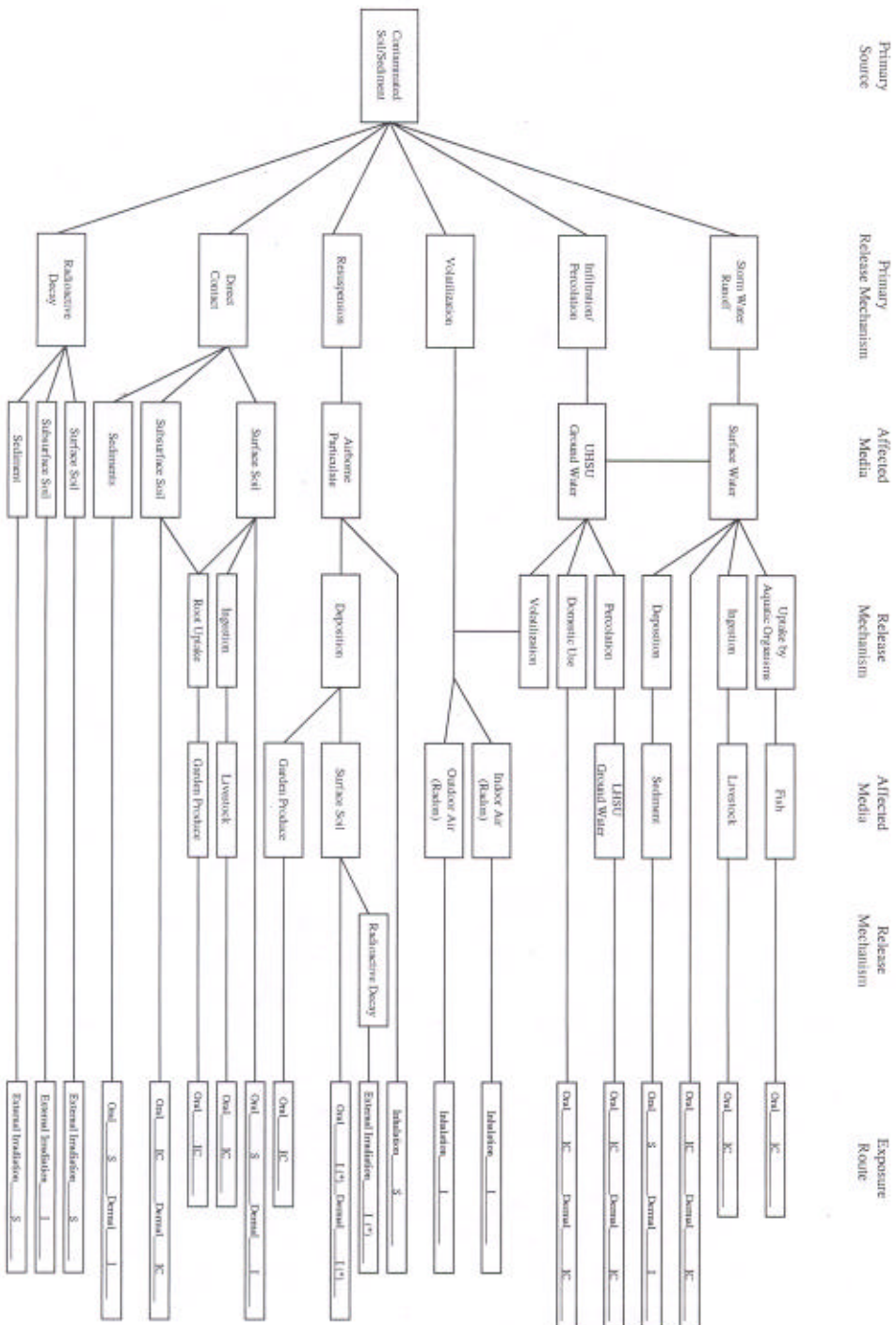
July 31, 2000

Preliminary Draft RSAL Conceptual Site Model

HYPOTHETICAL RESIDENTIAL EXPOSURE SCENARIO



OFFICE WORKER EXPOSURE SCENARIO



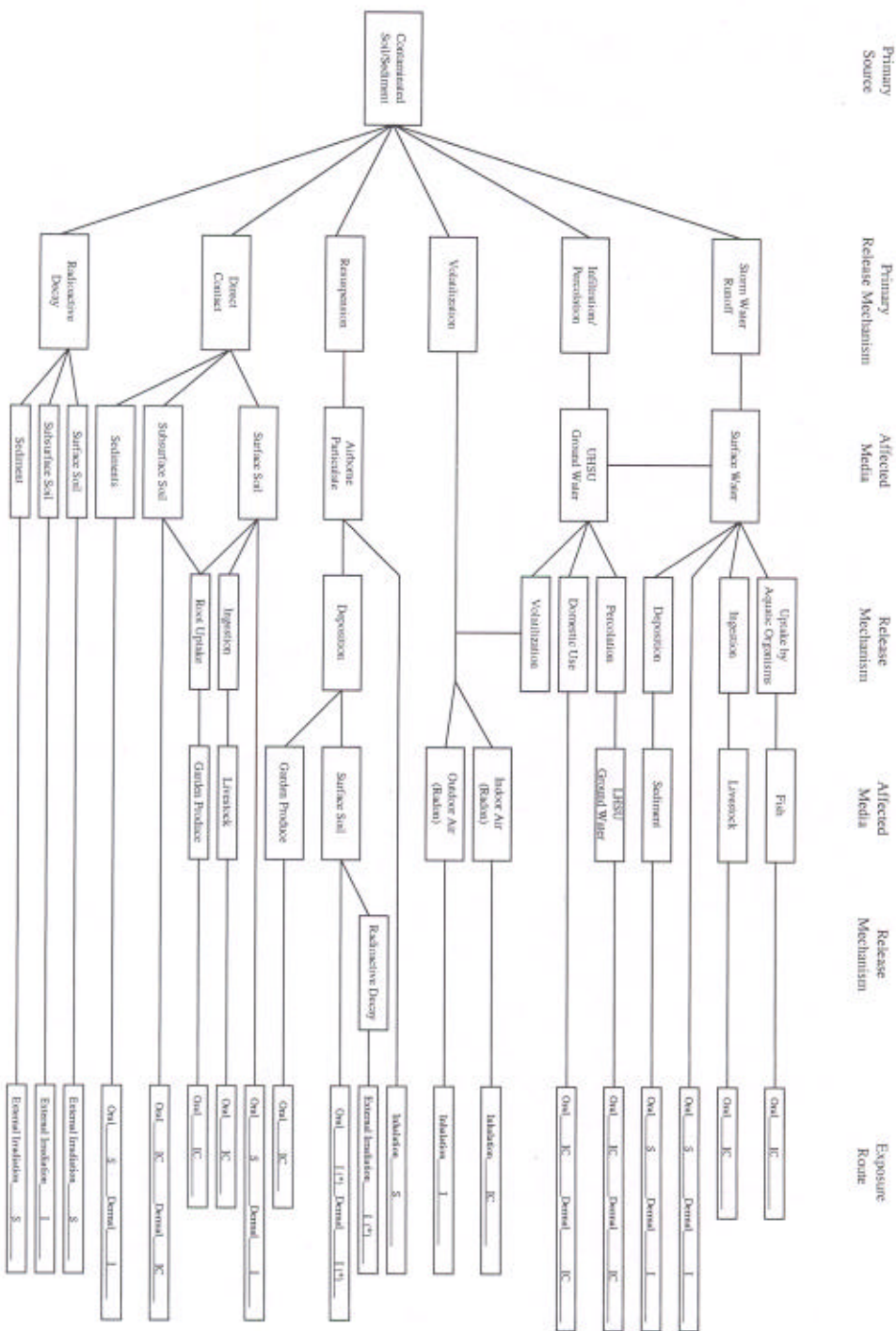
(*) This exposure rate is insignificant since a small fraction of radioactive material is transported and subsequently deposited on soils.

S = Significant Pathway
I = Insignificant Pathway
IC = Incomplete Pathway

July 31, 2000

Preliminary Draft RSAL Conceptual Site Model

OPEN SPACE EXPOSURE SCENARIO



S = Significant Pathway
I = Insignificant Pathway
IC = Incomplete Pathway

Attachment 3

**PRELIMINARY DRAFT
RADIONUCLIDE SOIL ACTION LEVEL
MODEL SELECTION CRITERIA**

The following criteria will be used to select the fate & transport model(s) and the radiation dosimetry model(s) needed to calculate the Radionuclide Soil Action Levels (RSAL) at the Rocky Flats Environmental Technology Site (RFETS). These criteria were developed based on the available literature, and the premise that RSALs will be developed based on radiation dose in a probabilistic manner.

Criteria #1 - Does the model incorporate key processes from the Conceptual Site Model?

The key processes from the CSM include those exposure pathways and exposure routes that are considered significant.

Criteria #2 - Does the model satisfy study objectives?

The study objective is to estimate the soil concentration that equates to an acceptable radiation dose for all applicable radionuclides over a study period of 1,000 years.

Criteria #3 - Has the model been verified using published analytical equations in scientific and technical journals?

The model results need to be compared with the solutions to analytical equations under the same conditions. These results need to be equivalent to assure that the analytical equations have been coded into the model correctly.

Criteria #4 - Has the model been validated or can the model be calibrated to site conditions?

The model results need to be compared with contaminant concentration data at a site to assure that the model can correctly assess realistic data. If validation is not possible, is it possible to calibrate the computer model using conditions at the site?

Criteria #5 - Does the model have the capability to satisfy study objectives using probabilistic analysis?

The model will need to assess the most sensitive parameters in a probabilistic manner by using distributions for inputs. The output from the computer model will also need to be a distribution so the result can be assessed probabilistically.

Criteria #6 - Is the model well documented?

The model will need to be well documented for ease of use and for reference.

Criteria #7 - Is the model available in the public domain?

The model will need to be readily available to the public for use and not experimental in nature.

Attachment 3

REFERENCES

ASTM, Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, E1739-95e1, November, 1995

ASTM Technical & Professional Training, RBCA Fate and Transport Models: Compendium and Selection Guidance, 1999

DOE, Rocky Flats Environmental Technology Site, Human Health Risk Assessment Model Description, Operable Unit 3, Technical Memorandum No. 3, March 6, 1995

DOE, Rocky Flats Environmental Technology Site, Draft Description of Models for the Human Health Risk Assessment, Operable Unit 4, Technical Memorandum No. 5, March 1993

DOE, Rocky Flats Environmental Technology Site, Final Human Health Risk Assessment Model Description, Operable Unit 5, Technical Memorandum No. 13, November 17, 1994

EPA Fact Sheet: Documenting Ground-Water Modeling at Sites Contaminated with Radioactive Substances, EPA 540-F-96/002, January, 1996

EPA Fact Sheet: Computer Models Used to Support Cleanup Decision making at Hazardous and Radioactive Waste Sites, EPA/540/F-94-022, January, 1996

EPA Fact Sheet: Environmental Characteristics of EPA, NRC, and DOE Sites Contaminated with Radioactive Substances, EPA 540-F-94-023, January, 1996

EPA Fact Sheet: Environmental Pathway Models – Ground-Water Modeling in Support of Remedial Decision Making at Sites Contaminated With Radioactive Material, EPA/540/F-94-024, January, 1996

EPA Fact Sheet: A Technical Guide to Ground-Water Model Selection at Sites Contaminated with Radioactive Substances, EPA/540/F-94-025, January, 1996

Risk Assessment Corporation, Task 2: Computer Models, Final Report, July, 1999

Rocky Flats Clean up Agreement (RFCA) Annual
Review/Radionuclide Soil Action Level (RSAL) Technical Review

Public Meeting Summary Report

Westminster City Hall 6:00 to 8:00 PM
July 13, 2000

Introduction and opening remarks were presented by Paul Hartmann, Joe Legare, Steve Gunderson and Tim Rehder (see agenda-attached).

The Purpose of the Meeting was discussed:

- Provide information on the RFCA Annual review
- Provide information on work to date
- Provide the schedule for the review
- Provide the points of contact for the review

Background information regarding the Rocky Flats Clean up Agreement (RFCA) annual review was discussed that included:

- review of Radionuclide Soil Action Level (RSAL)
- review of modeling codes
- acknowledgement that new information could impact the RFCA RSAL
- involvement of the public/obligations to the public
- The Risk Assessment Corporation (RAC) report as input to the RFCA RSAL Review (a report summary was provided by Hank Stovall, City of Broomfield)
- the new Kaiser-Hill Closure Contract Baseline (revised cost estimate) was provided to the Department of Energy June 30, 2000

Preliminary questions and discussion occurred prior to the presentation and discussion of Work Assignments for the RSAL Technical Review (attached).

General Comments by RFCA Project Coordinators:

The general concept of clean up (if the remedial action is soil removal) is digging up wherever there is contamination. So, the extent of contamination has to be determined, and the extent of cleanup, as determined by the RSAL, has to be decided in order to conduct the cleanup.

The remedy for the 903 Pad, and some other areas, is likely to be excavation. The public needs to know and understand, however, how the scientifically based RSAL number is derived by understanding all of the information and data that are relevant, to date.

The original, interim RSAL was determined without true public understanding. Additionally, the computer modeling code used in the first RSAL determination to estimate exposure did not take into account off-site exposures and surface water concerns. This meeting explains the plan for and provides a forum for public involvement.

The Site is conducting some information gathering such as use of an open-bottomed "wind tunnel" to replicate the high-speed winds that occur at the Site. This technique will be used to measure any contaminated particles that come off of the ground, both in grass covered and burn areas, to detect re-suspended particles. This information will be evaluated by the RSAL review.

The RFCA RSAL is the minimum action (clean-up) level. There may be areas and or situations for which it is determined clean up to a lower level is appropriate.

The Site is obtaining information, based on wild fires at other DOE facilities, and the controlled test burn at the Rocky Flats Site. The results will be factored into the RSAL review.

Additionally, information resulting from the recent lightning strike caused grass fire, adjacent to a fixed air sampler station, will be evaluated. The results will be available in about 6 weeks.

Questions and Comments from the Public

Q. Regarding the Soil Action Levels versus Surface Water standards . . . how will the RFCA parties correlate the two? What is the relationship between removal of matter and surface water quality.

Response:

This issue is to be addressed and discussed at the RFCA Stakeholder Focus Group meetings. The RSAL relates to land use; though, not surface water quality. The environmental restoration remedy involves pursuing the RSAL most protective of human health.

- We need to come up with a defensible and timely number supported by the public, which is defensible in Washington, D.C. [to Government agencies and Congress].
- We should have a peer review of the final outcome to create credibility of a final number rather than the same people doing the same thing that they did before. The public wants scientific expert confirmation of the credibility of the work done.
- A peer review is not needed due to the input of the RAC report that will be reviewed by the RFCA parties.
- The only problem with RESRAD (the modeling code used by the Site and RAC) is the surface water standard routine. Water and soil are considered together but need to be kept separate. We need to establish the lower number and work from it.

- We have three agencies that are decision-makers that can make the decision with or without us – but they have created this forum for us to become part of this process. A possible solution is to get an expert to sit with the scientifically disadvantaged public.
- If a water standard is the driving factor for a number determination, is it then possible that some parts of the site are cleaned up to one standard and other parts cleaned up to another?

Response:

Radionuclide Soil Action Levels have been calculated for use on a Site-wide basis. The erosion study found that relatively very little material has/is eroding off of the Site. However, some areas of the Site may have to be remediated or managed beyond the RSAL in order to protect surface water quality.

Also, the Superfund law (Comprehensive Environmental Response, Compensation and Liability Act [CERCLA]) requires that a cleanup must meet “Applicable or Relevant and Appropriate Requirements” (ARARs). The Superfund law doesn’t have specific cleanup standards. The Nuclear Regulatory Commission (NRC) is considering a clean up standard. This standard, and other relevant regulations, will be reviewed as part of Action 1 of the Technical Review work assignment.

- Depending on the Action 1 [of the work assignments] decision that is made, do some of the other Action items go away?

Response: Some Action items, in fact, have already been done. All actions will be addressed in the report.

- RSALs are based upon perceived land uses. Do designated land uses drive RSALs or should the RSALs be determined without regard to land use first?

Response:

Land use scenarios are the basis for many input parameters when calculating an RSAL. Additionally, remedial action objectives are predicated upon land use designations.

- Again, the Rocky Flats clean up will be impacted by the issue of technically safe versus real world safe, or “how clean is clean”.

Response:

The Agencies need to pursue best cleanup and then it can be determined what land use can be accommodated. This is the pathway to the reduction of political aspects through solid technical and practical aspects.

- The real purpose of the RSAL is to protect public health and environmental integrity of the area in and around the Rocky Flats Site. Thus, this is a public driven standard.

Response:

Adopting the NRC standard and applying it to Rocky Flats is not a good idea. We are obligated to meet the CERCLA defined range of cleanup of 10^{-4} to 10^{-6} (Upper bound lifetime cancer risk to an individual). Additionally, The erosion report by the actinide migration panel indicates our RSAL would have to be pretty low to get .15 picocuries/liter (surface water) in perpetuity.

- The upper [RSAL] limit be 35 picocuries/gram because of the resulting exposure related to soil ingestion containing Pu [plutonium], i.e. the breathing rate and more direct soil intake pathways to the body.
- Is the erosion report a decision document?

Response:

No, it is a Technical study tool and not a decision document.

- We need the frame of mind to realistically accept that *this much clean* means *this much cost*. The expertise exists to tell us from the data we have, and the technology capabilities that exist, just what degree of clean we can get for what number of dollars. The next step would be to then determine suitable land use, as the land use correlates to clean up levels achieved.
- It seems that we don't know where the Pu is and don't know the real cost to get rid of it. And we don't know what's under the buildings.
- Ground water must be considered as part of RSAL review.

Response:

Ground water is not protected by regulations; surface water is.

Wrap-up – RFCA Project Coordinators

A request for information for the team to review should be provided by July 31st to a RFCA Project Coordinator or to a review point of contact, as indicated in the meeting notice. A Point of Contact and RFCA RSAL review action list was passed out (attached). The action leads will provide updates to their actions; the public can contact the review leads for information regarding the RSAL review. We expect to discuss the RSAL review at the RFCA Stakeholder Focus Group Meetings (Syllabus distributed). The Focus Group will determine when and what will be presented.

A second RFCA RSAL Review Meeting will be planned in the fall to discuss the draft results of the review.

**Rocky Flats Cleanup Agreement (RFCA) Annual Review/RSAL Technical Review
Public Meeting Agenda**

July 13, 2000

6:00 – 8:00

Westminster City Hall, Multipurpose Room

RFCA Project Coordinators

Joe Legare, Department of Energy, Rocky Flats

Steve Gunderson, Colorado Department of Public Health and Environment (CDPHE)

Timothy Rehder, Environmental Protection Agency, Region VIII

6:00 – 6:05

Introductions, Opening Remarks

Legare, Gunderson, Rehder

- RFCA Annual Review
- How the RSAL technical review is part of the annual review

6:05-6:45

RSAL Technical Review

RSAL Technical Review Background

- 1996 RSAL Report, **Rehder**
- 1997 to Present, developments related to RSALs, **Gunderson**
- How does an RSAL relate to the cleanup mission of RFETS?, **Legare**
- RAC Report, **Hank Stovall, City of Broomfield**

Work done to date

- DOE Reviews, **Russell McCallister, DOE**

The RFCA RSAL Review Work Assignments and Action Item Work Plans

- Work Assignments (**handout**)
Russell McCallister, DOE

Review Process

- How to stay in touch with work in progress (names, phone #s, e-mails) (**handout**)
- RFCA Stakeholder Focus Group Briefings, as scheduled on RFCA Stakeholder Focus Group Program of Study (**handout**)
Paul Hartmann, DOE

Next Steps (handout)

- Legare, Gunderson, Rehder**
- Schedule of events

6:45 to 8:00

Public Comment and Discussion

Legare, Gunderson, Rehder

- Work Assignments – further comments
 - Action 1
 - Action 2
 - Action 3
 - Action 4
 - Action 5
 - Action 6
- Any information RSAL Review should consider
- Other Comments
- Adjourn

RSAL Technical Review

Next Steps

- Technical Reviews-through summer /fall 2000
- Selected status debriefs/discussions per syllabus
- Draft report fall/winter 2000
- public meeting and comment period of 60 days, comments addressed in a responsiveness summary and incorporated into the final report as necessary
- Action Item 7 - final report, signed by Principles – winter 2000

RFCA RSAL Review Point of Contacts

Name/organization	Assignment/expertise	Phone	e-mail	Work Assignment Actions
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Radionuclide Soil Action Levels
Work assignments for RFCA RSAL Review

RFCA Radionuclide Soil Action Level Staff Action Group

The Rocky Flats Cleanup Agreement (RFCA) Radionuclide Soil Action Level (RSAL) staff action group for the year 2000 will evaluate any new information available and determine its impact to the RSALs. The action group is comprised of members from the Department of Energy (Rocky Flats Field Office, RFFO), Environmental Protection Agency (Region VIII), the Colorado Department of Public Health and Environment and the Kaiser-Hill Team. To start this evaluation, the staff action group will revisit work completed in FY98 and FY99 to refresh everyone's understanding of past information and identify areas that need further research.

In March 2000, RAC completed their contract of reviewing the RFCA RSALs. The RSALOP submitted the findings in the RAC report recommending a change to the RSALs. The staff action group needs to evaluate and incorporate any information relevant from this review and any other review conducted. This will be accomplished in each of the Actions identified below.

The RFCA RSAL review has two public meetings planned. The first, in July 2000, will discuss the RFCA Annual Review that includes review of the RSALs. The second meeting, planned for winter of 2000, will present the draft RFCA RSAL Review report. The public will be offered sixty days to comment. Comments will be considered for the final RFCA RSAL report.

The following Actions will need to be completed by the staff action group. The staff will work towards a mutual understanding of the issues and consensus to the path forward. Upon completion of each action, the staff will prepare a report providing a recommendation to the RFCA Principals. The report will identify areas that the group could not reach consensus and each RFCA party may have a different recommendation to their respective Principals.

Action 1 Conduct a regulatory analysis Time: Fall 2000

Suggested lead: EPA.
Support from DOE/KH and CDPHE

This action involves reviewing the dose-based (EPA, DOE, NRC; 15/85 mrem/yr. v. 25/100mrem/yr) approach versus a risk-based approach (CERCLA). The action group will review the EPA memo on radiation risk assessments (Directive 9200.4-31P), EPA guidance on probabilistic risk assessments, Federal Guidance Report No. 13 (potential new risk coefficients), and the Colorado adoption of NRC rule into its Radiation regulations. Determine whether an ALARA analysis is required and what minimum requirements are needed for the analyses.

Action 2 Model Evaluation Time: Fall 2000

Suggested lead: DOE/KH
Support from EPA and CDPHE

The action group will re-evaluate models previously reviewed and clearly document the similarities and differences between the available computer models that could be used to calculate a radionuclide soil action level. Examples of computer models that will be evaluated include the latest version of RAC modified RESRAD, RESRAD version 5.61 and probabilistic version (if available), DandD probabilistic. The outcome from Action 2 will be a recommended model to use and whether a probabilistic or deterministic approach should be followed.

Action 3 Parameter Evaluation

Time: Fall/Winter 2000

Suggested lead: DOE/KH
Support from EPA and CDPHE

The action group will evaluate input parameters, including a comparison with RAC values, for the models evaluated in Action 2. The staff action group will decide whether/how a fire event (or other catastrophic event) should/could be incorporated into the model. What are the implications of institutional control failure and how that should be incorporated in future RSALs. What are plausible future land uses, and how conservative do they need to be. If open space is still the reasonable foreseeable future land use, define specifically what uses are allowed (e.g., percentage time hiking, biking, picnicking, etc.). Review original open space uses as defined in 1996 RSAL calculation: review 1998 RFCA Annual Review Report; RAC Task 3 Report, etc. The action group will look at affects of different dose limits as dictated by Action 1. Document the similarities and differences between the available parameters.

Action 4 New Scientific Information

Time: Complete by 8/00

Suggested lead: DOE/KH
Support from EPA and CDPHE

The action group will evaluate new scientific information since FY98 and as it becomes available throughout the year. For example, the controlled burn plot presented some information about resuspension of dust after a prairie fire. In addition, the fire at Los Alamos should provide excellent data that needs to be studied. Other data needs to be gathered concerning grassland fires and revegetation times in the surrounding areas. The outcome of this assessment may be new information that may impact the RSALs. All new scientific information will be summarized; including how the new scientific information may impact the RSALs.

Action 5 Cleanup Levels at Other Sites

Time: Fall 2000

Suggested lead: CDPHE
Support from EPA and DOE/KH

This task involves a review of RSALs at other sites. The action group will evaluate any information available on how RSALs levels were derived at other sites and develop an understanding on the differences and similarities between the derivation of the cleanup level compared to the derivation of the RSALs.

During the 1998 RSAL Annual Review, the RFCA RWG identified two sites that had derived radionuclide cleanup standards for plutonium, americium, and/or uranium using the RESRAD computer code i.e., the Nevada Test Site (Tonopah Test Range) and the State of Washington (for implementation at Hanford). Because both of these sites are using these values on an interim basis, the RWG agreed to continue reviewing periodically the radionuclide cleanup standards from the Nevada Test Site (Tonopah Test Range) and the State of Washington in order to understand how these values were derived and to determine if there is any information that may affect the RSALs.

Action 6 Draft Report

Time: Winter 2000

Suggested lead: CDPHE
Support from DOE/KH and EPA

DOE/KH will recalculate RSALs (if needed) and CDPHE will lead the action group through the RFCA public comment process and change to the RSALs.

Action 7 Final Report

Time: Winter 2000

Lead: RFCA Parties

A final report documenting each action will be produced upon completion of each task. Following public comment and incorporation of relevant comments, the final report will be part of the RFCA Annual Review.

DRAFT

**Radionuclide Soil Action Levels - DOE Rocky Flats
Workplan for Action 1: Conduct a Regulatory Analysis**

Scheduled time of completion: Fall 2000

Goals:

- 1) upon review of the documents listed below on risk- and dose-based determinations and making a determination on the NRC rule, a recommendation would be made regarding the appropriate rule and/or dose or risk methodology for determining an RSAL
- 2) evaluate whether RSALS should be based on a deterministic or probabilistic risk assessment

Tasks:

- 1) Review the Draft Comparison Table (Laura Brooks, Kaiser-Hill, 1999) re. the NRC Requirement/Approach (dose-based) (recently adopted by Colorado) and CERCLA Requirement/Approach (risk-based), and the RSALS RFCA Requirement/Approach (1996) based on the now defunct EPA draft rule which tried to establish 15/85 as the basis
- 2) Review/determine applicability of OSWER Directive No. 9200.4-18 - Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination (Aug. 22, 1997)
- 3) Review/determine applicability of OSWER Directive No. 9200.4-23 - Clarification of the Role of Applicable, or Relevant and Appropriate Requirements in Establishing Preliminary Remediation Goals under CERCLA (Aug. 22, 1997)
- 4) Review/determine applicability of OSWER Directive 9200.4-31P - Radiation Risk Assessment at CERCLA Sites: Q&A (December, 1999)
- 5) Review/determine applicability of EPA guidance on probabilistic risk assessments - latest version of Risk Assessment Guidance (RAGS 3A Draft)
- 6) Review/determine applicability of Federal Guidance Report No.13 - Cancer Risk Coefficients for Environmental Exposure to Radionuclides - potential new risk coefficients

6/19/00; K. Reed

Radionuclide Soil Action Levels

Workplan for Action 2: Model Evaluation

Completion: Fall, 2000

- 1) Develop Conceptual Model for RFETS with surface soils and subsurface soils being the source of radioactive material in the environment. Exposure Pathways will be assessed for exposure scenarios applicable to the RFCA as well as any other exposure scenarios required to meet regulatory requirements.
- 2) Evaluate environmental transport and radiation dosimetry computer models that support the conceptual model.
- 3) Develop criteria by which all environmental transport and radiation dosimetry computer models will be evaluated. These criteria will include an evaluation of the extent of model validation and verification.
- 4) Identify deterministic models
- 5) Identify Probabilistic models-Probabilistic RESRAD available July 2000, DandD available December 2000. This includes the RAC probabilistic model.
- 6) Evaluate all environmental transport and radiation dosimetry computer models against criteria developed in Part 3.
- 7) Recommend model.

Radionuclide Soil Action Levels
Workplan for Action 3: Parameter Evaluation

Completion: Fall/Winter 2000

- 1) Identify plausible future land uses and any regulatory driven land uses applicable to the RSALs. Obtain RFCA principal approval to use these land uses to derive RSALs.
- 2) Using model(s) chosen in Action 2, conduct sensitivity analysis of all parameters in the model using all applicable radionuclides. Focus efforts on defining the most appropriate value(s) for the most sensitive parameters for RSAL derivation. Develop range or probability distribution from literature/site sources for most sensitive parameters, if appropriate. All available information, including RAC reports, will be reviewed for parameter definition.
- 3) Evaluate how/whether a fire event should be incorporated into the model. If a probabilistic model is chosen, investigate expanding distributions to include the affects of a fire.
- 4) Run computer model.

Radionuclide Soil Action Levels

Workplan for Action 4: New Scientific Information

Completion: August, 2000

- 1) Conduct literature search on fires in the front range area. Evaluate types of fires that would be expected with their affects. Evaluate the affect of fires on continued land use.
- 2) Evaluate any information available from recent Los Alamos fires.
- 3) Evaluate air resuspension model within the selected model(s) from Action 2 and within the RAC model.
- 4) Evaluate wind tunnel study results from Site controlled burn.
- 5) Evaluate Actinide Migration Evaluation (AME) studies.
- 6) Incorporate new scientific information, as appropriate, into Action 3.

Action 5 Cleanup Levels at Other Sites

CDPHE will coordinate the review of new information received from other sites on the establishment of radionuclide soil action levels. Reviews will include information from the following:

- Updates to RSALS from the Nevada Test Site (Tonopah Test Range)
- Updates to RSALS from the State of Washington for Hanford
- New information from Johnston Atoll
- Information on the methodology used at Fernald and Oak Ridge
- The RSALOP Task 1 Report

This review is tentatively scheduled to be completed in Fall, 2000.

Action 7 Draft Report

Although all the agencies will be assigned tasks in preparing a draft final report on the RSALS, CDPHE will coordinate comments and feedback of the Stakeholder Focus Group, from letters received by the agencies, and verbal feedback received from public meetings, and ensure that these comments are addressed in the final report.